

L4 - Direct Variation & Partial Variation

Direct Variation: is a straight line that passes through the origin. $(0,0)$

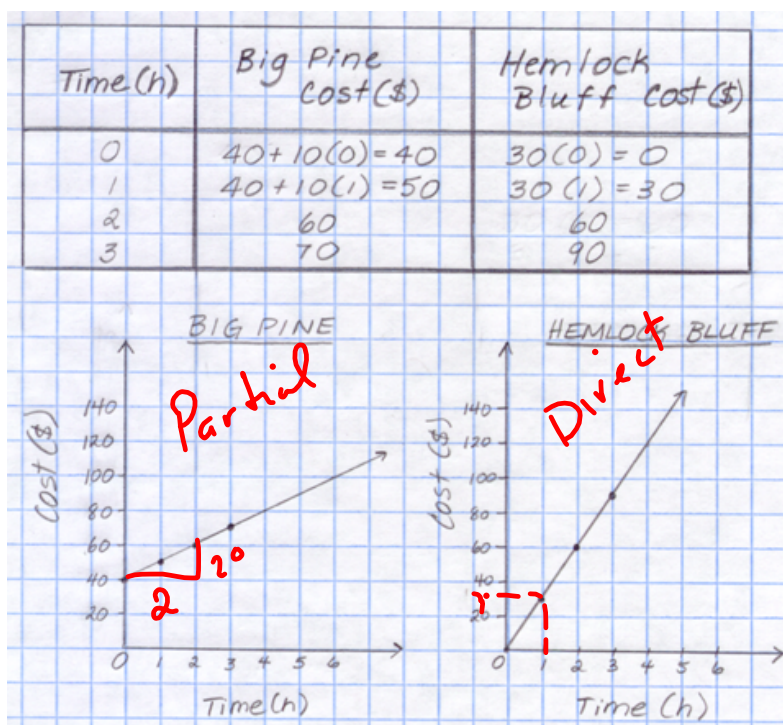
Partial Variation: is a straight line that does not pass through the origin.

L4 - Direct Variation & Partial Variation

Jaraad wants to rent a canoe for a day trip. He gathers this information from two places and decides to make a table of values and graph each of these relationships.

- **Big Pine Outfitters** charges a base fee of \$40 and \$10 per hour of use.
- **Hemlock Bluff Adventure Store** does not charge a base fee, but charges \$30 per hour to use the canoe.

Jaraad's Working Sheet



1. a) What is the cost of each canoe if Jaraad cancels his reservation?

Big Pine will Cost \$40.00
Hemlock will cost \$0.00

- b) Compare the rate of change of Big Pine and Hemlock Bluff.

Big Pine ROC = $\frac{20}{2}$
= \$10 per hour
Hemlock ROC = $\frac{30}{1}$ = \$30 per hour

2. Which graph illustrates a proportional relation that begins at (0, 0)?

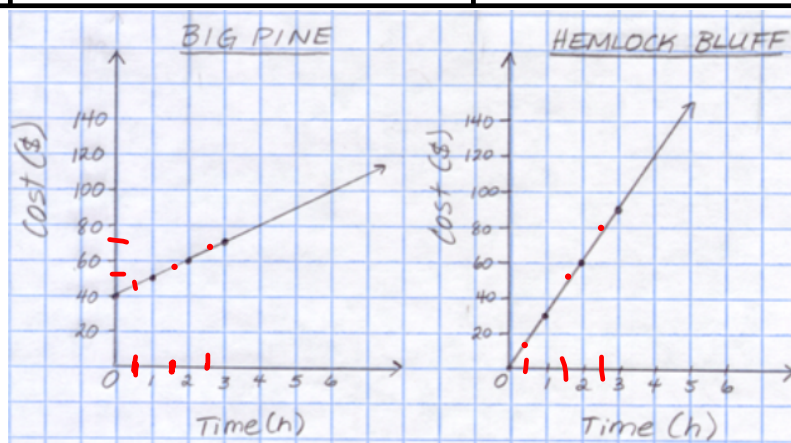
Hemlock — Direct Variation

3. Which graph has an initial value other than zero?

Big Pine — Partial Variation

4. Which outfitter company should Jaraad choose if he estimates he will canoe for 0.5 h?...1.5 h?...2.5 h?

Time (h)	Big Pine Cost (\$)	Hemlock Bluff Cost (\$)
0.5	\$45	\$10 ✓
1.5	\$55	\$50 ✓
2.5	\$65 ✓	\$80



$$\text{Hemlock } y = 30x + 0$$

When making the equation of a line use this formula

$$y = \text{R.O.C.}(x) + \text{initial value}$$

Dependent Variable

Independent Variable



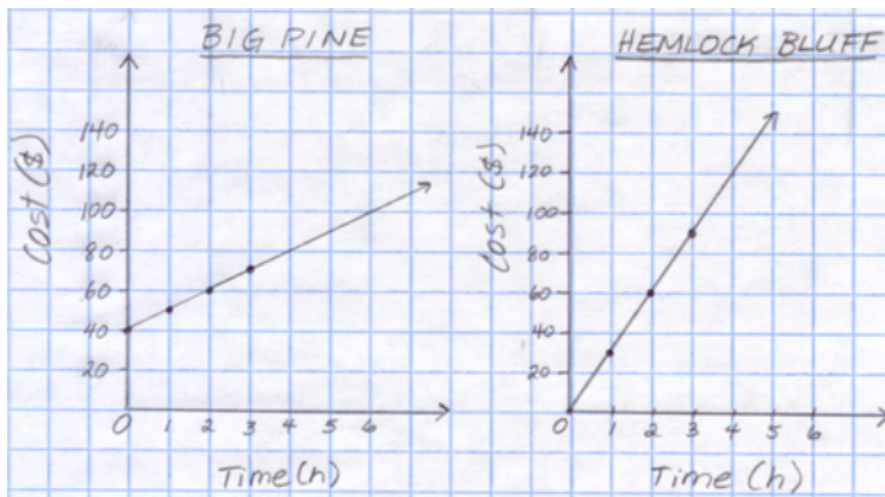
$$y = 10x + 40$$

Big Pine

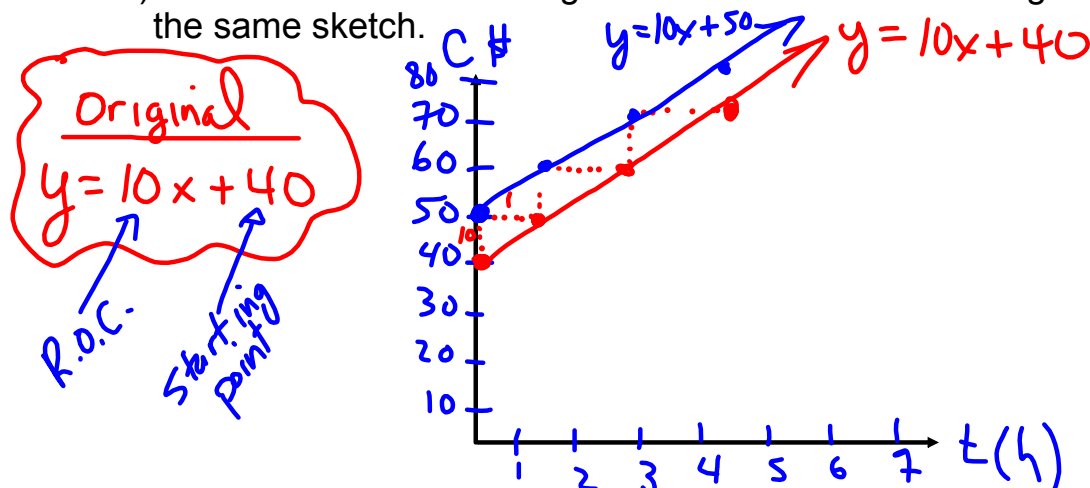
5. Write an equation to model the cost for each outfitter.
Let C represent the cost in dollars and h represent the time in hours.

Big Pine $C = 10h + 40$

Hemlock Bluff $C = 30h$



6. If Big Pine Outfitters decided to change its base fee to \$50 and charge \$10 per hour, what effect would this have on the graph?
a) Draw a sketch of the original cost and show the changes on the same sketch.

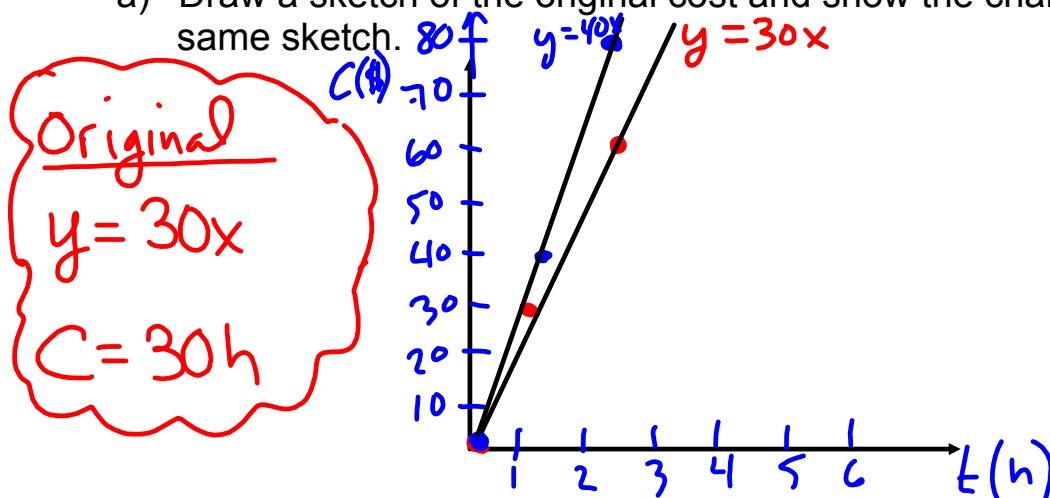


- b) Write an equation to model the new cost.

$y = 10x + 50$ $C = 10h + 50$

7. If Hemlock Bluff Adventure Store decided to change its hourly rate to \$40, what effect would this have on the graph?

a) Draw a sketch of the original cost and show the changes on the same sketch.



b) Write an equation to model the new cost.

$y = 40x$ $C = 40h$

8. For Big Pine Outfitters, how are the pattern in the table of values, the description, the graph, and the equation related?

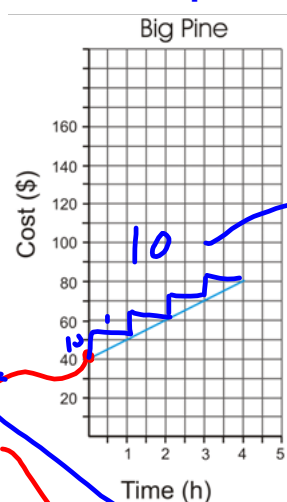
Description

Big Pine Outfitters charges a base fee of \$40 to deliver the canoe to the launch site and \$10 per hour of use.

Table of Values

Time (h)	Cost (\$)
0	40
1	50
2	60
3	70

Graph



Equation

$C = 40 + 10h$

Initial Amount

R.O.C

9. For Hemlock Bluff, how are the pattern in the table of values, the description, the graph, and the equation related?

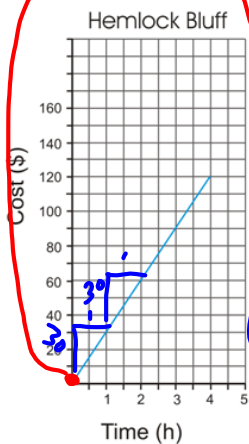
Description

Hemlock Bluff charges \$30 per hour.

Table of Values

Time (h)	Cost (\$)
0	0
1	30
2	60
3	90

Graph



Equation

$$C = 30h + 0$$

Initial amount
0

$$\frac{\text{Rise}}{\text{Run}} = \frac{30}{1}$$

R.O.C.
Rate of Change

Assigned Work

p.207 #1, 5

p.213 #1

p.214 #4